

REMARKS

The specification has been amended to correct errors of a typographical and grammatical nature. Due to the number of corrections thereto, applicants submit herewith a Substitute Specification, along with a marked-up copy of the original specification for the Examiner's convenience. The substitute specification includes the changes as shown in the marked-up copy and includes no new matter. Therefore, entry of the Substitute Specification is respectfully requested.

The claims and abstract have also been amended to more clearly describe the features of the present invention.

Also submitted herewith is a proposed amendment to the drawings, wherein Figs. 2, 7 and 8 have been amended at this time. Upon receipt of the approval of the amendment to the drawings and receipt of a Notice of Allowance, the proposed drawing corrections will be effected in accordance with present practice.

Entry of the preliminary amendments and examination of the application is respectfully requested.

To the extent necessary, applicant's petition for an extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 01-2135 (Case: 503.42787X00) and please credit any excess fees to such deposit account.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

~~Claim 1:~~

1. (Amended) A throttle system, having
a throttle body, wherein
~~——a through hole for~~ is formed to receive one end of the shaft of a throttle valve
to be inserted ~~there-through is formed,~~
~~——a bearing~~ recession, with a diameter larger than the through hole, for installing
a bearing that supports the shaft, to allow the shaft to rotate, is formed outside the
through hole,
~~——and an enlarged recession, that is~~ larger than the through hole, is formed
between the through hole and bearing ~~recession;~~
a bearing that is installed in the recession so as to support the shaft to allow
the shaft to rotate; and
a seal structure, which is provided at an area including the through hole or an
area including the boundary between the enlarged recession and the through hole.

~~Claim 2:~~

2. (Amended) A throttle system according to Claim 1, wherein the enlarged
recession is smaller in diameter than the bearing ~~recession~~ and a combination of the
bearing ~~recession~~ and enlarged recession forms a stepped recession.

~~Claim 3:~~

3. (Amended) A throttle system according to Claim 1, wherein the seal structure is constructed of seal material made of fluorocarbon resin, polyether etherketone resin, polyimide resin, polyamide resin, or polyphenylene sulfide resin.

~~Claim 4:~~

4. (Amended) A throttle system according to Claim 1, wherein the seal structure is so constructed that the area of a cross section in the enlarged recession₁ which, including the axis of the shaft, is parallel to the axis₁ is ~~made~~ equal to or smaller than the area of a cross section in the gap between the circumferential surface of the shaft and inner wall of the through hole which crosses the axis of the shaft.

~~Claim 5:~~

5. (Amended) A throttle system₁ which is provided with a throttle body, comprising: a shaft that crosses ~~the~~_a suction passage of ~~a~~_{the} throttle body and ~~can support the~~_{supports} a throttle valve midway in the suction passage; ~~and~~_{and} bearings that support the shaft to allow the shaft to rotate axially, ~~seal material,~~
wherein through holes ~~for~~_{are} provided in the throttle body, through which the shaft ~~to be~~_{is} inserted ~~through the throttle body~~_{so as to extend} across the suction passage, and stepped recessions are provided in the throttle body for installing the bearings, ~~and controls~~_{whereby} the suction air flow in ~~an~~_{the} suction passage internal ~~combustion engine~~_{is controlled} by operating the throttle valve, through rotation of said shaft; and

wherein seal material is provided between the suction passage side end of ~~the~~_a bearing and a suction passage side opening of the through hole₁ so that ~~the~~_a

contact surface between the seal material and a stepped recession side opening of the through hole and the contact surface between the seal material and a shaft surface are sealed.

~~Claim 6:~~

6. (Amended) A throttle system, which is provided with a throttle body, comprising: a shaft that crosses ~~the~~a suction passage of ~~a~~the throttle body and ~~can support the~~supports a throttle valve midway in the suction passage; and bearings that support the shaft to allow the shaft to rotate axially; ~~seal material,~~
wherein through holes ~~for~~are provided in the throttle body, through which the shaft ~~to be~~is inserted through the throttle body so as to extend across the suction passage, and stepped recessions are provided in the throttle body for installing the bearings, ~~and controls whereby~~ the suction air flow in ~~an~~the suction passage internal combustion engine is controlled by operating the throttle valve; through rotation of said shaft; and

wherein seal material is provided between the suction passage side end of ~~the~~a bearing and a suction passage side opening of the through hole, so that ~~the~~a contact surface between the seal material and the inside circumference of the stepped recession or through hole and the contact surface between the seal material and a shaft surface are sealed.

~~Claim 7:~~

7. (Amended) A throttle system, which is provided with a throttle body, comprising: a shaft that crosses ~~the~~a suction passage of ~~a~~the throttle body and ~~can support the~~supports a throttle valve midway in the suction passage; bearings that

support the shaft to allow the shaft to rotate axially; and seal material, provided between the suction passage side of a bearing and a suction passage side opening of the through hole;

wherein through holes ~~for~~are provided in the throttle body, through which the shaft ~~to be~~ is inserted ~~through the throttle body~~so as to extend across the suction passage, and stepped recessions are provided in the throttle body for installing the bearings, ~~and controls whereby~~ the suction air flow in an the suction passage internal combustion engine is controlled by operating the throttle valve,

wherein the shaft ~~is made into~~ has a stepped shape having a larger diameter on the suction passage side and a smaller diameter on the throttle body outward side, and ~~the~~ a contact surface between the seal material and a side surface of the stepped shape of the shaft and the contact surface between the seal material and the inside circumference of the stepped recession or the inside circumference of the through hole are sealed.

~~Claim 8:~~

8. (Amended) A throttle system according to any one of Claims 5, 6 and 7, wherein the bearing is an anti-friction roller having inner and outer rings, the diameter of the seal material is equal to or smaller than that of the anti-friction bearing outer ring, and there is provided a stepped recession in the seal material, ~~as if the step is directed through the seal material~~, in which the diameter of one recession is equal to or larger than that of the anti-friction roller inner ring and smaller than that of the outer ring, and the diameter of the other recession is equal to or larger than that of the shaft and equal to or smaller than that of the through hole.

Claim 9:

9. (Amended) A throttle system₁ which is provided with a throttle body, comprising: a shaft that crosses ~~the~~a suction passage of ~~a~~the throttle body and ~~can support the~~supports a throttle valve midway in the suction passage;; and bearings that support the shaft to allow the shaft to rotate axially;

wherein through holes ~~for~~are supported in the throttle body, through which the shaft ~~to be~~is inserted through the throttle bodyso as to extend across the suction passage, and stepped recessions are provided in the throttle body for installing the bearings, ~~and controls whereby~~ the suction air flow in ~~an internal combustion engine~~the suction passage is controlled by operating the throttle valve,through rotation of said shaft; and

wherein

a gap surroundedformed by the stepped recession, the shaft and a bearing of the throttle body₁ or a gap between the through hole and the shaft₁ ~~of the throttle body~~ is filled with adaptive material withhaving a high adaptivity and lubricity in the course between the suction passage side ~~end~~ of the bearing and the suction passage side opening of the through hole.

Claim 10:

10. (Amended) A throttle system₁ which is provided with a throttle body, comprising: a shaft that crosses ~~the~~a suction passage of ~~a~~the throttle body and ~~can support the~~supports a throttle valve midway in the suction passage;; bearings that support the shaft to allow the shaft to rotate axially;; and a seal mechanism;;

wherein through holes ~~for~~are provided in the throttle body, through which the shaft ~~to be~~ is inserted through the throttle bodyso as to extend across the suction

passage, and stepped recessions are provided in the throttle body for installing the bearings, ~~and controls~~whereby the suction air flow in ~~an~~the suction passage is controlled ~~internal combustion engine~~ by operating the throttle valve, through rotation of said shaft; and

wherein

wherein the seal mechanism is so provided that the circumferential cross-sectional area in a gap ~~surrounded~~formed by the shaft, a bearing and the stepped recession is equal to or smaller than the axial cross-sectional area in a gap between the shaft and the through hole.

IN THE ABSTRACT:

To reduce the amount of air leakage from the air cleaner side of the throttle system into the engine side on an occasion where the throttle valve is set to a closed position. ~~The,~~ a seal material 43 is installed in the ~~course of the~~ air passage that runs from the upstream side of the suction passage 3, passes through the upstream side of the gap 35 between the shaft 7 and through hole 25, communicates with the gap 37 ~~surrounded~~formed by the stepped recession 29, the shaft 7 and the bearing 34 of the throttle body 4, runs in the circumferential direction of the shaft and through the downstream side of the gap 35, and reaches the downstream side of the suction passage 3.

[~~Selection Drawing~~] Fig. 5